The italics are mine. It was under this aspect of its functions that a remarkably progressive paper by R. A. Fisher, which had nothing to do with applied biometry, but solely advanced statistical theory, was published in 1915.

Your reviewer complains that while *Biometrika* in its early years contained many papers of eugenic interest and importance, it has since the war ceased to do so. The reason for this is obvious. The material that came to my hands was so copious and, in my judgment at least, so good, that it was necessary to publish it elsewhere, and for this purpose the *Eugenics Laboratory Memoirs*, and ultimately the *Annals of Eugenics*, were founded to issue this material. Now that the control of those publications has passed into other hands *Biometrika* will no doubt as formerly be happy to receive eugenic papers of interest and importance.

One word further. Your critic states that *Biometrika* "was formerly published by the Galton Laboratory." This is completely erroneous. The only publishers have been the Cambridge University Press, and, after 1922, for economic reasons, myself. *Biometrika* was founded ten years before the Galton Laboratory came into existence. Financially, it has never in any way depended on the funds of the Galton Laboratory, but has been run throughout by private support. Since 1922 it has been *issued*, at first from the Biometric Laboratory—and now from the *Biometrika Office*, University College. I have in both cases to record my thanks to the College for providing me with the accommodation needful to carry on my work.

KARL PEARSON.

Department of Zoology,
University College, London.

Brain and Mind

To the Editor, Eugenics Review

Sir,—Sir Josiah Stamp honoured my work on the East African with a mention in his Galton Lecture (EUGENICS REVIEW, July 1934, page 107), and it seems desirable to make clear that I have not suggested anywhere that brain capacity is a measure of individual mental capacity.

The matter of standards has always appeared to me to be of primary importance to the kind of comparative racial research in which I am interested and I am, therefore, glad to be able to enclose a communication on this point from Mr. A. Walter, our well-known East African statistical authority.

H. L. GORDON.

Nairobi.

P.O. Box 931,
Nairobi.
September 26th, 1934.

DEAR DR. GORDON,

Sir Josiah Stamp's references to our work on the statistical problems presented by your researches into amentia in the East Africa are very suggestive.

The frequency distribution which Sir Josiah Stamp proposes takes either the parabolic form $y = ax^b$ or the hyperbolic form $y = ax^{-b}$. Even accepting his limitation that the frequency curve is to refer only to those above the deficiency level, it seems to me that his suggestion must presuppose one of two conditions. In the distribution represented by $y=ax^b$, the numbers will increase with increasing intelligence, a very unlikely distribution in any universe, whether it is a general or selective one. In that represented by $y = ax^{-b}$, there would be a small number of highly intelligent personalities and the numbers of those of lower intelligence would steadily increase. The proportions would, of course, be measured by the slope of the logarithmic curve, as Sir Josiah Stamp states, but it is the *form* of the distribution suggested which appears to me to be fundamentally wrong.

In the distribution of brain capacity obtained from your researches, although the curve approached the normal curve $y = ke^{-ax^2}$, this was probably due to insufficient material; but, even in these scanty observations, asymmetry is marked, being thrown towards the origin in the case of aments and away from it in the case of the educated class.

It seems more than likely that a distribution similar to the Pearsonian Type IV would represent the true distribution more consistently than the logarithmic curve in measurements both of physical and mental fitness, as it does in many other biological measurements.

This Type IV distribution has some outstanding characteristics which may be found of great assistance in future research work. The shape, but not necessarily the type of the frequency distribution curve, must clearly depend on the standard adopted. Type IV is asymptotic—i.e. a perfect genius or a perfect imbecile would not occur, however closely some one individual might approach these standards. If the standard adopted were very high, then there would be a crowding up towards the origin of the curve where the mode would occur: the distribution would be markedly asymmetric and might even approach the hyperbolic form suggested by Sir Josiah Stamp, or perhaps more correctly Type III of the Pearsonian series. On the other hand, if the standard adopted were very low, the mode would shift to the right. Hence the whole problem of distribution is clearly dominated by standards of comparison.

Type IV curve suggests itself as a very powerful analytical instrument. Not only would the asymmetry of the curve measure the suitability of the standard adopted, but the varying asymmetry in different distributions derived from different universes, for which the same standards had been used, would serve as a measure of comparative intelligence between the universes (race or class)

considered. Even if the actual observations did not fit Type IV, they could certainly be adapted to one or other of the transition curves which would provide a measure of the asymmetry of the distribution.

[At this point in his letter Mr. Walter illustrates the frequency distributions referred to by a series of diagrams which may be inspected at the offices of the *Eugenics Society*.—Editor.]

The existence of a distribution approaching the normal frequency distribution might be accepted as an indication that the standards adopted were suitable. The measure of asymmetry which would indicate unsuitablity must, however, be the subject of careful research by competent psychiatrists and statisticians. If two universes each resulted in a normal distribution, the comparison would be between their standard deviations.

The selection of suitable standards is the most important and essential condition for comparative research on this problem. On the standard of the intellectuals, perhaps Sir Josiah Stamp is right: the frequency curve is hyperbolic and the great majority tail away into ever-increasing unintelligence. What else can explain the economic conditions of to-day? If this is the case, let us hope that there will always be a healthy slant in the logarithmic curve. A world of uniform horizontal mediocrity or worse still, of vertical intelligence, must be an extremely unpleasant one to live in.

Yours sincerely,

A. WALTER.